GENERAL RADIO COMPANY
service department

TESTING SPECIFICATIONS — August, 1959

Type 1102-A Multivibrator and Power Supply Unit

22 Baker Avenue
West Concord, Mass.

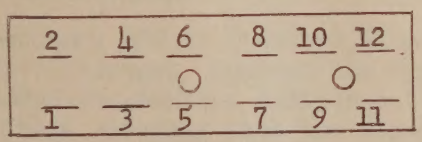
Test Equipment

1 - Volt-Ohmmeter
1 - Type 1102-A Test Cable
1 - Type 1101-A Piezo-Electric Oscillator
1 - Type 1190-B Crystal
1 - Type 1103-A Syncronometer
1 - Type 736-A Wave Analyzer or equivalent
1 - Type 1800-B Vacuum-Tube Voltmeter or equivalent
1 - Voltmeter-Wattmeter-Variac Unit
1 - Tektronix Oscilloscope
1 - 2.0 Microfarad Capacitor, 600 VDC
Standard Frequency Lines

1.0 Power Supply Ohmmeter Checks

1.1 Check that terminals #2, #4, and #12 of Socket SO-103 are grounded. Check that terminals #13, #14, #15, and #16 of Socket SO-102 are not grounded. Check that terminals #8 and #12 of Socket SO-101 are grounded.

SO-103



2.0 Multivibrator Shelf Ohmmeter Checks

2.1 Check that terminals #2, #4, and #12 of Plug PL-1 are grounded. Check that terminal #4 on Socket SO-1 is grounded.

3.0 Preliminary Operational Checks

3.1 Connect the Type 1102-A Multivibrator shelf to the Power Supply section using the Type 1102-A Test Cable. Apply 115-v, 60-c power through the Voltmeter-Wattmeter-Variac Unit to the Type 1102-A. Turn on the FIL. PLATE switch and check that the input power is about 105 watts. Turn on the HEAT switch and check that the input power increases to about 150 watts. (Heater circuit load is 45 watts.)

3.2 Measure the d-c voltage of the relay coil between terminals #14 (+) and #13 (-) on Socket SO-102 to be 4.0 to 6.0 volts.

4.0 Power Supply Voltage Checks

4.1 Connect the Type 1101-A Piezo-Electric Oscillator with the 1190- B Crystal installed and the Type 1103-A Syncronometer to the Type 1102-A. Keep the line input constant at 115 volts. Measure the following voltages on the Test Socket connected to the Type 1102-A Test Cable:

TEST SOCKET

TEST SOCKET TERMINALS	VOLTAGE READING	MEASURES VOLTAGE AT TERMINALS
#7 to #8	6.3 a-c	#7 to # 8, Socket SO-103
#6 to #5	6.3 a-c	#9 to #10, Socket SO-103
#3 to #2	310 d-c	#3 to #12, Socket SO-103
#1 to #2	290 d-c	#11 to #12, Socket SO-101

Measure the a-c voltage between terminals #9 and #10 on Socket SO-101 to be 6.3 volts.

4.2 Connect the Type 736-A Wave Analyzer, set at DIRECT INPUT (1 MEGOHM), to terminals #11 and #12 on Socket SO-103 with the 2.0 μf, 600 vdc capacitor in series with the high terminal (#11). Ground the metallic shell of the capacitor to the Type 1102-A chassis to avoid 60-cycle pick-up. Ground the Type 736-A and the Type 1102-A. Measure the hum at 60 cycles, using the Wave Analyzer, to be less than 25 mv. Change the Type 5R4GY Tube if the hum is excessive. Remove and discharge the capacitor.

5.0 100 Kc Multivibrator Adjustments

5.1 Connect the Laboratory 100 kc Standard Line to the horizontal input of the Tektronix Oscilloscope. Connect the Type 1102-A, 100-kc output (J-1) and the Type 1800-B Vacuum-Tube Voltmeter to the vertical input of the Oscilloscope. Check visually that the blades of the frequency potentiometers, R-6 and R-10, track in the same relative position. Adjust potentiometer R-1 to $\frac{1}{4}$ of its range from the grounded end. Tune R-6 and R-10 for a 1:1 pattern on the Oscilloscope. Check that this setting of the frequency potentiometers lies within the middle 1/3 of their ranges. Set R-1 to maximum (signal input end). Check that the "in-control" span of R-6 and R-10 to the center of the "in-control" span. Check the a-c output on the Voltmeter to be about 7.9 volts.

6.0 10 Kc Multivibrator Adjustments

6.1 Connect the Laboratory 10 Kc Standard Line to the horizontal input of the Tektronix Oscilloscope. Connect the Type 1102-A, 10-kc output (J-2) and the Type 1800-B Voltmeter to the vertical input of the Oscilloscope. Check visually that the blades of the frequency potentiometers, R-21 and R-26, track in the same relative position. Adjust potentiometer R-16 to $\frac{1}{4}$ of its range from the grounded end. Tune R-21 and R-26 for a

1:1 pattern on the Oscilloscope. Check that this setting of the frequency potentiometers lies within the middle 1/3 of their ranges. Set R-16 to maximum (signal input end). Check that the "in-control" span of R-21 and of R-26 occupies about 1/4 to 1/3 of the entire range and that the span is located between 1/4 and 3/4 of the total range. Set R-21 and R-26 to the center of the "in-control" span. Check the a-c output on the Voltmeter to be about 62.7 volts. Check the a-c output at J-3 to be about 25.3 volts.

7.0 1 Kc Multivibrator Adjustments

7.1 Connect the Laboratory 1 Kc Standard Line to the horizontal input of the Tektronix Oscilloscope. Connect the Type 1102-A, 1-Kc output (J-4) and the Type 1800-B Voltmeter to the vertical input of the Oscilloscope. Check visually that the blades of the frequency potentiometers, R-38 and R-43, track in the same relative position. Adjust potentiometer R-33 to R-43, track in the same relative position. Adjust potentiometer R-33 to 1/4 of its range from the grounded end. Tune R-38 and R-43 for a 1:1 pattern on the Oscilloscope. Check that this setting of the frequency potentiometers lies within the middle 1/3 of their ranges. Set R-33 to maximum (signal input end). Check that the "in-control" span of R-38 and of R-43 occupies about 1/4 to 1/3 of the entire range and that the span is located between 1/4 and 3/4 of the total range. Set R-38 and R-43 to the center of the "in-control" span. Check the a-c output on the Voltmeter to be about 47.7 volts. Check the a-c voltage between terminal #1 of Socket SO-1 and ground to be about 48.3 volts.

8.0 100 Cycle Multivibrator Adjustments

8.1 Connect the Laboratory 100 cycle Standard Line to the horizontal input of the Tektronix Oscilloscope. Connect the Type 1102-A, 100 cycle output (J-5) and the Type 1800-B Voltmeter to the vertical input of the Oscilloscope. Check visually that the blades of the frequency potentiometers, R-55 and R-60, track in the same relative position. Adjust potentiometer R-50 to 1/4 of its range from the grounded end. Tune R-55 and R-60 for a 1:1 pattern on the Oscilloscope. Check that this setting of the frequency potentiometers lies within the middle 1/3 of their ranges. Set R-50 to maximum (signal input end). Check that the "in-control" span of R-55 and of R-60 occupies about 1/2 to 2/3 of the entire range. The location of the span is not important. Set R-55 and R-60 to the center of the "in-control" span. Check the a-c output on the Voltmeter to be 42.5 volts.

9.0 Final Instructions

9.1 Remove the Type 5R4GY Tube. Connect the multivibrator shelf to the Power Supply section and fasten with four wing-nuts. Install the same Type 5R4GY Tube.

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